



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

July 25, 2011

Mr. Michael Pacilio  
Chief Nuclear Officer and Senior Vice President  
Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: OYSTER CREEK GENERATING STATION - NRC INTEGRATED INSPECTION  
REPORT 05000219/2011003

Dear Mr. Pacilio:

On June 30, 2011, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Oyster Creek Generating Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on July 21, 2011, with Mr. M. Massaro, Site Vice President, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

The report documents one NRC-identified finding of very low safety significance (Green) that was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it is entered into your corrective action program, the NRC is treating this finding as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Oyster Creek Generating Station. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspector at Oyster Creek Generating Station. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

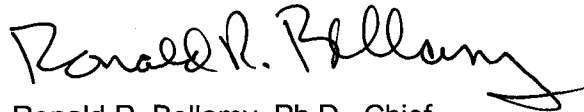
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M. Pacilio

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We appreciate your cooperation. Please contact me at (610) 337-5200 if you have any questions regarding this letter.

Sincerely,

A handwritten signature in black ink, reading "Ronald R. Bellamy". The signature is fluid and cursive, with a long, sweeping tail on the final "y".

Ronald R. Bellamy, Ph.D., Chief  
Projects Branch 6  
Division of Reactor Projects

Docket No. 50-219  
License No. DPR-16

Enclosure: Inspection Report 05000219/2011003  
w/Attachment: Supplemental Information

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M. Pacilio

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We appreciate your cooperation. Please contact me at (610) 337-5200 if you have any questions regarding this letter.

Sincerely,

/RA/

Ronald R. Bellamy, Ph.D., Chief  
Projects Branch 6  
Division of Reactor Projects

Docket No. 50-219  
License No. DPR-16

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**U. S. NUCLEAR REGULATORY COMMISSION****REGION I**

Docket No.: 50-219

License No.: DPR-16

Report No.: 05000219/2011003

Licensee: Exelon Nuclear

Facility: Oyster Creek Generating Station

Location: Forked River, New Jersey

Dates: April 1, 2011 – June 30, 2011

Inspectors: J. Kulp, Senior Resident Inspector  
J. Ambrosini, Resident Inspector  
E. Keighley, Resident Inspector  
A. Patel, Resident Inspector  
S. Barr, Senior Emergency Preparedness Inspector  
J. Caruso, Senior Operations Engineer  
T. Hedigan, Operations Engineer  
J. Tomlinson, Operations Engineer  
C. Cowdrey, Operations Engineer

Approved By: Ronald R. Bellamy, Ph.D., Chief  
Projects Branch 6  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

IR 05000219/2011003; 04/01/2011 – 06/30/2011; Exelon Energy Company, LLC, Oyster Creek Generating Station; Maintenance Effectiveness.

The report covered a 3-month period of inspection by resident inspectors. One Green non-cited violation was identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). The cross-cutting aspects were determined using IMC 0310, "Components Within the Cross Component Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

### Cornerstone: Mitigating Systems

- Green. The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion X, "Inspection," when Exelon did not conduct a post maintenance inspection of work accomplished by a contractor on main steam isolation valve (MSIV), V-1-10, which resulted in heat damage to the valve position indication cabling causing a ground on the cable and the receipt of a half scram. Exelon's corrective actions included replacement of the damaged cable, performance of a work group evaluation and revising the main steam insulation work orders to include a caution to not install insulation on top of cabling.

The finding was more than minor because it affected the design control attribute of the mitigating systems cornerstone of equipment performance to ensure the availability, reliability, and capability of a Class I cable. Additionally, this finding is similar to IMC 0612, Appendix E, Example 4.a, in that an evaluation required by procedures was not performed and resulted in a failure in the system. The inspectors evaluated the risk of this finding using IMC 0609, "Significance Determination Process," attachment 4, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined that the finding was of very low safety significance (green) because it did not result in an actual loss of function of the MSIV or the reactor protection system. The inspectors determined that this performance deficiency did not involve a cross cutting aspect as it occurred 4 years earlier and is not indicative of current licensee performance. (Section 1R12)

## REPORT DETAILS

### Summary of Plant Status

The Oyster Creek Generating Station (Oyster Creek) began the inspection period operating at full power.

On April 30, operators performed a planned shutdown to start the 1M27 maintenance outage. The plant returned to full power on May 7. Details of this maintenance outage are in section 1R20.

On May 9, operators performed a planned downpower to 70% to perform a rod pattern adjustment. The plant returned to full power later the same day.

On May 20, operators performed an unplanned downpower to 88% due to a trip of the 1A2 and 1A3 feed heaters. The plant returned to full power later the same day. Details on this event are in section 4OA3.

Oyster Creek operated at full power for the remainder of the inspection period.

### 1. REACTOR SAFETY

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

#### 1R01 Adverse Weather Protection (71111.01)

##### a. Inspection Scope (5 samples)

The inspectors performed the following inspections: one seasonal extreme weather readiness review, one review of power system readiness, one external flooding review, and reviews of two site specific weather-related conditions.

The inspectors reviewed Exelon's activities associated with seasonal readiness for hot weather conditions. The inspectors reviewed the updated final safety analysis report (UFSAR) for Oyster Creek to identify risk significant systems that require protection from hot weather conditions. The inspectors assessed the readiness of the service water, emergency service water, and emergency diesel generator (EDG) systems to seasonal susceptibilities. The inspectors performed a walkdown of the EDG structure and the intake to review the material condition of the area. The inspectors reviewed Exelon's cold/hot weather preparation activities to assess their adequacy and to verify they were completed in accordance with procedure requirements. The inspectors also reviewed applicable corrective action program condition reports to assess their reliability and material condition of their systems.

The inspectors evaluated Exelon's readiness to address issues that could impact offsite and alternate AC power systems. The inspectors reviewed Exelon's procedures and programs which discussed the operation and availability/reliability of offsite and alternate AC power systems during adverse weather. The inspectors verified that communication protocols between the transmission system operator and Exelon existed, and the

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appropriate information would be conveyed when potential grid stress and disturbances occurred. The inspectors also verified that Exelon's procedures contained actions to monitor and maintain the availability/reliability of offsite and onsite power systems prior to and during adverse weather conditions.

The inspectors evaluated Exelon's readiness to cope with external flooding. The inspectors reviewed the UFSAR to determine structures and areas of the site that are susceptible to flooding and performed walk downs of these areas. The inspectors also reviewed abnormal or emergency procedures that would be used to cope with flooding to ensure that operators were able to implement them in advance of and during the onset of flooding conditions.

The inspectors reviewed Exelon's response to a severe thunderstorm warning on April 13 and a tornado watch on June 1. The inspectors verified that operators properly monitored important plant equipment that could have been affected by the weather conditions. The inspectors performed walkdowns of areas that could be potentially impacted by the storm conditions to ensure there was no damage from the severe weather.

Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope (5 samples)

The inspectors performed four partial and one complete equipment alignment inspections. The partial equipment alignment inspections were completed during conditions when the equipment was of increased safety significance such as would occur when redundant equipment was unavailable during maintenance or adverse conditions, or after equipment was recently returned to service after maintenance. The inspectors performed a partial walkdown of the following systems, and when applicable, the associated electrical distribution components and control room panels, to verify the equipment was aligned to perform its intended safety functions:

- 'B' isolation condenser on April 4;
- Containment spray system 2 on April 18;
- Core spray system 1 on May 24; and
- Service water system on June 24.

On June 30th, the inspectors performed a complete system alignment inspection on reactor building closed cooling water to determine whether the system was aligned in accordance with design basis requirements. The inspectors reviewed operating procedures, the surveillance test procedure, pipe and instrument drawings, and the applicable equipment lineup list, to determine if the equipment was aligned to perform its safety function upon actuation.



Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope (71111.05Q 4 samples)

The inspectors performed a walkdown of four plant areas to assess their vulnerability to fire. During plant walkdowns, the inspectors observed combustible material control, fire detection and suppression equipment availability, visible fire barrier configuration, and the adequacy of compensatory measures. The inspectors reviewed "Oyster Creek Fire Hazards Analysis Report" and "Oyster Creek Pre-Fire Plans" for risk insights and design features credited in these areas. Additionally, the inspectors reviewed corrective action program condition reports documenting fire protection deficiencies to verify that identified problems were being evaluated and corrected. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report. The following plant areas were inspected:

- 'B' 480 V switchgear room (OB-FZ-6B) on April 12;
- Condenser bay (TB-FZ-11E) on May 1;
- 4160 V Room (TB-FA-3A and TB-FA-3B) on May 25; and
- Intake structure (CW-FA-14) on June 24.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope (2 samples)

The inspectors performed one internal flood protection inspection activity and one review of cables located in an underground manhole.

The inspectors completed one internal flood inspection sample. The inspectors reviewed selected risk-important plant design features and Exelon procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors focused on mitigation strategies and equipment in the northwest corner room of the reactor building which contains the 'A' and 'C' core spray main pumps. The inspectors reviewed flood analysis and design documents, including the UFSAR maintenance work orders, corrective action issue reports (IRs), and alarm response procedures. The inspectors performed a walkdown of the flood barriers (including wall penetrations and watertight doors), floor drains, floor sumps and isolation valves, and potential flooding sources. The inspectors evaluated these items to assess piping structural integrity, material condition, mitigating equipment functionality, design bases conformance, configuration control, and potential internal flood vulnerabilities.

The inspectors performed an internal flood protection inspection associated with bunkers and manholes. The inspectors reviewed corrective action program documentation concerning conditions in the cable vaults containing station blackout electrical cables and test results for station blackout cables. The inspectors also reviewed Exelon's actions to monitor cable degradation and actions to minimize water accumulation and submergence of medium voltage cables contained in these areas.

Documents associated with these reviews are listed in the Supplemental Information attachment to this report.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11)

a. Inspection Scope (2 samples)

Biennial Review by Regional Specialists. Inspection activities were performed using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1, Inspection Procedure Attachment 71111.11, "Licensed Operator Regualification Program," Appendix A, "Checklist for Evaluating Facility Testing Material," and Appendix B, "Suggested Interview Topics."

A review was conducted of recent operating history documentation found in inspection reports, licensee event reports, Exelon's corrective action program, and the most recent NRC plant issues matrix (PIM). The inspectors also reviewed specific events from Exelon's corrective action program which indicated possible training deficiencies, to verify that they had been appropriately addressed. The senior resident inspector was also consulted for insights regarding licensed operators' performance. These reviews did not detect any operational events that were indicative of possible training deficiencies.

The inspectors reviewed three comprehensive written exams, thirteen simulator scenarios, and twenty-one job performance measures, which comprised the test items administered or planned for administration the weeks of May 23, May 30, and June 6 to ensure the quality of these exams met or exceeded the criteria established in the Examination Standards and 10 CFR 55.59. The inspectors observed the administration of the operating exams to one crew during the onsite inspection week, which began May 23.

On July 7, the results of the annual operating tests for year 2011 and the written exam for 2011 were reviewed to determine if pass fail rates were consistent with the guidance of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1, and NRC Inspection Manual Chapter 0609, Appendix I, "Operator Regualification Human Performance Significance Determination Process (SDP)." The review verified the following:

- Crew pass rates were greater than 80%. (Pass rate was 100%)
- Individual pass rates on the dynamic simulator test were greater than 80%. (Pass rate was 100%)
- Individual pass rates on the job performance measures of the operating exam were greater than 80%. (Pass rate was 100%)
- Individual pass rates on the written exam were greater than 80%. (Pass rate was 98%)
- More than 75% of the individuals passed all portions of the exam. (98% of the individuals passed all portions of the examination)

Observations were made of the dynamic simulator exams and job performance measures (JPM) administered during the week of May 23. These observations included facility evaluations of crew and individual performance during the dynamic simulator exams and individual performance of six JPMs.

The remediation plans for crew and individual failures for cycle quizzes (i.e., 10 reactor operators and 3 senior reactor operators), out of the box evaluations (i.e., 7 reactor operators and 8 senior reactor operators), emergency action level declarations (i.e., 3 senior reactor operators) and one 2009 biannual reactor operator written failure were reviewed to assess the effectiveness of the remedial training.

Operators, instructors, training management and operations management were interviewed for feedback on their training program and the quality of training received.

Simulator performance and fidelity were reviewed for conformance to the reference plant control room. The inspectors observed simulator performance during the conduct of the examinations, and reviewed simulator discrepancy reports to verify facility staff were complying with the requirements of 10 CFR 55.46. The inspector reviewed a sample of simulator tests including transient, steady state, and scenario-based tests.

A sample of records for requalification program feedback, reporting, and eleven medical examinations (i.e., 7 reactor operators and 4 senior reactor operators) and 2 license reactivation records (i.e., 1 reactor operator and 1 senior reactor operator) were reviewed for compliance with license conditions, including NRC regulations.

Requalification Activities Review by Resident Staff. The inspectors observed one simulator training scenario to assess operator performance and training effectiveness on May 5. The inspectors observed "just in time" training scenarios for plant startup from the 1M27 maintenance outage. The inspectors assessed whether the simulator adequately reflected the expected plant response, operator performance met Exelon's procedural requirements, and the simulator instructor's critique identified crew performance problems. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)a. Inspection Scope (3 samples)

The inspectors performed three maintenance effectiveness inspection activities. The inspectors reviewed the following degraded equipment issues in order to assess the effectiveness of maintenance performed by Exelon:

- Main steam isolation valve (MSIV) wiring in the trunnion room (IR 1210400) on May 1;
- Standby gas treatment system 2 (IR 1226484) on June 8; and
- Main control room annunciators (IR 1227720) on June 20.

The inspectors also verified that the systems or components were being monitored in accordance with Exelon's maintenance rule program requirements. The inspectors compared documented functional failure determinations and unavailable hours to those being tracked by Exelon. The inspectors reviewed completed maintenance work orders and procedures to determine if inadequate maintenance contributed to equipment performance issues. The inspectors also reviewed applicable work orders, corrective action program condition reports, operator narrative logs, and vendor manuals. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

Introduction. The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion X, "Inspection," for the failure to perform a post maintenance inspection in accordance with MA-AA-1000, Conduct of Maintenance Manual, which requires "Exelon personnel to physically, independently verify (IV), final valve restoration before returning equipment to Operations" when the work package is performed by contract personnel. This resulted in a significant condition adverse to quality when Exelon did not identify that the main steam isolation valve (MSIV) valve position indication cable was run along and insulated against the steam line piping, which caused heat damage and eventual grounding of the cable which, in turn caused the receipt of a half scram input to the reactor protection system.

Description. On January 14, the 'N', 'P' and 'Q' alarm panels flashed intermittently for a few moments. The operators noted that the balance of plant (BOP) audible alarm was not working and that the 'J', 'K' and 'B' panels did not have alarm lights. During a walkdown of the alarm panels, operators identified that smoke was emanating from the 'J' A2 power supply card. Initial troubleshooting identified grounds on the "MSIV Off-Normal" alarm circuit in this panel. Exelon personnel were able to restore the affected panels, however, the "MSIV Off-Normal" alarm remained locked in. On April 29, a half scram was received. Operators responded to the half-scram and found no other alarms were received that would have identified the cause of the half-scram. Operators were able to reset the half scram and submitted the issue into the corrective action program as IR 1209785. On May 1, during performance of troubleshooting in the trunnion room, Exelon maintenance personnel identified that the wire for the limit switch for V-1-10 was covered by MSIV insulation and was in contact with main steam piping. This resulted in heat damage to the cable's protective "sealtite" coating resulting in the cable having an

intermittent ground, which caused some of the alarm troubles in January and the invalid half scram signal in April.

During the 1R21 outage in 2006, Exelon disassembled V-1-10 to perform an internal modification to the valve under work order C2012793. The valve insulation was removed to perform the work. During pre-startup walkdown of the trunnion room on November 10, 2006, radiation protection technicians noted that the insulation was not installed following completion of the work on V-1-10 and documented this discrepancy in IR556218. The insulation was replaced, by contractor insulators, prior to startup which occurred on the following day. During this reinstallation, the wire was laid up against the main steam line underneath of the insulation. Exelon did not ensure that a first line supervisor performed a walk down of the job performed by the contract insulators after it was finished as required by MA-AA-1000, "Conduct of Maintenance Manual", which could have identified that the wiring had been wrapped against the pipe.

Analysis. Exelon's failure to provide proper oversight of contractors in accordance with MA-AA-1000 is a performance deficiency. This finding was determined to be of more than minor significance because it affected the design control attribute of the Mitigating Systems Cornerstone of equipment performance to ensure the availability, reliability, and capability of a class I cable. This finding is similar to IMC 0612, Appendix E, Example 4.a, in that an evaluation required by procedures was not performed and resulted in a failure in the system. Specifically, the first line supervisor did not perform a walk down of work done by contractors, which resulted in the wiring being wrapped in piping insulation, heat damage to and grounding of the cable, and receipt of a half scram. The inspectors evaluated the risk of this finding using IMC 0609, "Significance Determination Process," Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined that the finding was of very low safety significance because it did not result in an actual loss of function of the MSIV or the reactor protection system. The inspectors determined that this performance deficiency did not involve a cross cutting aspect as it occurred 4 years earlier and is not indicative of current licensee performance.

Enforcement. 10 CFR 50, Appendix B, Criterion X, "Inspection," states, in part, that "Examinations, measurements, or tests of material... shall be performed for each work operation where necessary to assure quality... If mandatory inspection hold points, which require witnessing or inspecting by the licensee's designated representative and beyond which work shall not proceed without the consent of the designated representative are required, the specific hold points shall be indicated in appropriate documents." Contrary to the above, Exelon failed to implement an adequate post maintenance inspection to provide assurance that maintenance on the safety related equipment was performed properly. Specifically, Exelon failed to ensure that the insulation was installed in a manner that would prevent damage to the cables and allow the associated instrumentation and alarms to function as designed. Because the licensee entered the issue into their corrective action program as IR 1210400 and the finding is of very low safety significance (Green), this violation is being treated as an NCV, consistent with the Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000219/2011003-01: Failure to perform acceptance inspection of contractor work results in damage to safety related instrument cable.)**

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)a. Inspection Scope (5 samples)

The inspectors reviewed five on-line risk management evaluations through direct observation and document reviews for the following plant configurations:

- Change in risk due to a severe thunderstorm warning on April 13;
- Change in risk due to a severe thunderstorm warning and tornado watch on June 1;
- Affect on risk due to heat alert and a grid emergency generation alert on June 8;
- Core spray system #1 unavailable due to planned surveillance and standby gas treatment system #1 unavailable due to planned maintenance on May 31; and
- Change in risk due to a severe thunderstorm warning and a tornado warning on June 23.

The inspectors reviewed the applicable risk evaluations, work schedules, and control room logs for these configurations to verify the risk was assessed correctly and reassessed for emergent conditions in accordance with Exelon's procedures. Exelon's actions to manage risk from maintenance and testing were reviewed during shift turnover meetings, control room tours, and plant walkdowns. The inspectors also used Exelon's on-line risk monitor (Paragon) to gain insights into the risk associated with these plant configurations. Additionally, the inspectors reviewed corrective action program condition reports documenting problems associated with risk assessments and emergent work evaluations. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15)a. Inspection Scope (4 samples)

The inspectors reviewed four operability evaluations for degraded or non-conforming conditions associated with:

- "ED" 4160V breaker protective relay on April 18 (IR 1203285);
- Containment isolation valve position indicator on May 10 (IR 1214035);
- Source range monitor 22 on April 30 (IR 1209980); and
- Non-destructive evaluation (NDE) results found to be below minimum wall criteria on emergency service water (ESW) piping on April 29 (IR 1209774).

The inspectors reviewed the technical adequacy of the operability evaluations to ensure the conclusions were technically justified. The inspectors also walked down accessible portions of equipment to corroborate the adequacy of Exelon's operability evaluations. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)a. Inspection Scope (1 temporary and 2 permanent modification samples)

The inspectors reviewed one temporary and two permanent plant modification that were implemented by Exelon personnel at Oyster Creek. The inspectors reviewed the following modifications:

- Main feed system temperature element (TE-47) (temporary modification OC-11-00196-001);
- Calculation on combustion turbine tank oil level (permanent modification OC 10-00175-000); and
- Hardened vent system modification (permanent modification OC-MDD-822A).

The inspectors reviewed the engineering/procedure change packages, design basis, and licensing basis documents associated with each of the modifications to ensure that the systems associated with each of the modifications would not be adversely impacted by the change. The inspectors walked down portions of the systems associated with the modification when applicable and prudent. The inspectors reviewed the modifications to ensure they were performed in accordance with Exelon's modification process. The inspectors also ensured that revisions to licensing/design basis documents and operating procedures were properly revised to support implementation of the modification. The inspectors also reviewed Exelon's 10 CFR 50.59 screening for each of the modifications. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)a. Inspection Scope (5 samples)

The inspectors observed portions of and/or reviewed the results of five post-maintenance tests for the following equipment:

- 'A' main control room ventilation (HVAC) system operability test following preventive maintenance on April 6 (R2175959);
- Steam inlet valve to 'B' emergency condenser following preventive maintenance on April 6 (R2145671);
- Main steam safety valves following installation on May 7 (R2136087);
- Fire suppression deluge valve functional test on April 30 (C2025410); and
- IRM 12 detector replacement on April 30 (C2024631).

The inspectors verified that the post-maintenance tests conducted were adequate for the scope of the maintenance performed and that they ensured component functional capability. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)a. Inspection Scope (1 sample)

The inspectors monitored Exelon's activities associated with the outage activities described below. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

On April 30, operators initiated a plant shutdown to support a planned maintenance outage to replace 3 control rod drives, 5 main steam code safety valves and the containment penetration for the 'A' reactor recirculation pump power cable. The inspectors observed portions of the shutdown from the control room, and reviewed plant logs to ensure that technical specification requirements were met for placing the reactor in "hot shutdown" and "cold shutdown." The inspectors also monitored Exelon's controls over outage activities to determine whether they were in accordance with procedures and applicable technical specification requirements.

The inspectors verified that cool down rates during the plant shutdown were within technical specification requirements. The inspectors performed a walkdown of portions of the drywell (primary containment) and the condenser bay and the main steam tunnel on May 2 to verify there was no evidence of leakage or visual damage to passive systems contained in these areas. The inspectors noted that approximately 1 gallon of



water was present in the south drywell trench and that the north drywell trench was dry. The inspectors verified that Exelon assessed and managed the outage risk. The inspectors confirmed on a sampling basis that tagged equipment was properly controlled and equipment configured to safely support maintenance and plant operations. During control room tours, the inspectors verified that operators maintained reactor vessel level and temperature within the procedurally required ranges for the operating condition. The inspectors also verified that the decay heat removal function was maintained through monitoring shutdown cooling (SDC) parameters. The inspectors observed Oyster Creek's plant onsite review committee (PORC) startup affirmations on May 4.

The inspectors performed an inspection and walk down of portions of the drywell prior to containment closure on May 5, to verify there was no evidence of leakage or visual damage to passive systems and to determine that debris was not left which could affect drywell suppression pool performance during postulated accident conditions. The inspectors noted that approximately one quart of water was present in the south drywell trench and that the north drywell trench was dry. The inspectors monitored restart activities that began on May 5, to ensure that required equipment was available for operational condition changes, including verifying technical specification requirements, license conditions, and procedural requirements. Portions of the startup activities were observed from the control room to assess operator and equipment performance. The inspectors further verified that unidentified leakage and identified leakage rate values were within expected values and within technical specification requirements.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope (3 inservice test (IST) samples and 5 routine surveillance samples)

The inspectors observed portions of and/or reviewed the results of eight surveillance tests:

- 'A' isolation condenser valve operability and IST on April 4;
- Standby liquid control pump and valve operability and IST on April 12;
- Reactor coolant system (RCS) leak detection surveillance on April 11;
- Station blackout functional test on November 22;
- Reactor high pressure scram test and calibration on April 11;
- Reactor building to torus power vacuum breaker test on May 9 ;
- Electromatic relief valve (EMRV) pressure sensor test and calibration on May 24; and
- Standby gas treatment system #1 surveillance on May 31.

The inspectors verified that test data was complete and met procedural requirements to demonstrate the systems and components were capable of performing their intended function. The inspectors also reviewed corrective action program condition reports that documented deficiencies identified during these surveillance tests. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

b. Findings

No findings were identified.

4. **OTHER ACTIVITIES [OA]**4OA1 Performance Indicator Verification (71151)a. Inspection Scope (3 samples)

The inspectors reviewed performance indicator (PI) data associated with three PIs. The inspectors used the guidance provided in Nuclear Energy Institute (NEI) 99-02, Revision 5, "Regulatory Assessment Performance Indicator Guideline" to assess the accuracy and completeness of the PI data reported by Exelon. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

The inspectors reviewed the following PIs:

- "Unplanned Scrams per 7000 Critical Hours" between April 1, 2010 and March 31, 2010.
- "Unplanned Scrams with Complications per 7000 Critical Hours" between April 1, 2010 and March 31, 2010.
- "Safety System Functional Failures" between April 1, 2010 and March 31, 2010.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152).1 Review of Items Entered Into the Corrective Action Program

The inspectors performed a daily screening of items entered into Exelon's corrective action program to identify repetitive equipment failures or specific human performance issues for follow-up. This was accomplished by reviewing hard copies of each condition report, attending daily screening meetings, or accessing Exelon's computerized database.

.2 Semi-Annual Review to Identify Trendsa. Inspection Scope (1 sample)

The inspectors performed a semi-annual review of site issues, as required by Inspection Procedure 71152, "Problem Identification and Resolution," to identify trends that might indicate the existence of more significant safety issues. In this review, the inspectors included repetitive or closely-related issues that may have been documented by Exelon in places other than the normal corrective action system, such as trend reports, performance indicators, major equipment problem lists, system health reports, maintenance rule assessments, and Oyster Creek management reports. The inspectors also reviewed Exelon's corrective action program database to assess condition reports

written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRC's daily condition report review. The results of the trend review by the inspectors were compared with the results of normal baseline inspections. The review considered a six-month period of January 1 through June 30, 2011.

b. Assessment and Observations

No findings were identified.

The inspectors noted continued recurring instances of water in the emergency diesel generator (EDG) cable trenches. On four separate occasions (March 17, May 31, June 6, and June 27), the inspectors noted standing water in the cable trenches. This issue was first identified during the 2010 NRC Component Design Basis Inspection (NCV 05000219/2010008-02, EDG Low Voltage Control Cable Submergence). The corrective actions developed in response to the NCV included cleaning out the EDG cable trench drains, which had not been completed at the end of this assessment period. Exelon continues to monitor the trenches each night through operator rounds and pumps out any standing water upon discovery.

3. Annual Sample Review

a. Inspection Scope (1 Annual sample)

The inspectors reviewed Exelon's evaluation and corrective actions associated with the following issues. Documents reviewed for this inspection activity are listed in the Supplemental Information attachment to this report.

The inspectors reviewed Exelon's evaluation and corrective actions associated with IR 1193110, "Full reactor scram due to the main condenser low vacuum trip" and IR 556890, "Power increase from 1R21 delayed to condenser vacuum". The inspectors reviewed relevant corrective action program condition reports to ensure that the full extent of the issue was identified, appropriate evaluations were performed, and corrective actions were specified, prioritized and effective. The inspectors discussed this issue with operations, engineering and licensing personnel.

b. Findings and Observations

Introduction. An unresolved item (URI) was identified to review the results of Exelon's investigation to identify the source of water that builds up in the 48 inch offgas header following a plant shutdown, an evaluation of the effect of that water on the inability to draw a vacuum in the turbine condenser on the subsequent startup, and to evaluate the effectiveness of the corrective actions taken following a similar event in 2006 to determine if a performance deficiency existed. The inspectors will review the results of Exelon's evaluation after it is completed, which had not occurred by the end of this inspection period.

Description During the startup from the 1M26 outage in December 2010, Oyster Creek experienced a full reactor scram due to a main condenser low vacuum trip. Exelon performed a root cause evaluation, which was centered on operator performance issues, and documented the results in IR 1155520. NRC inspectors reviewed the root cause

report (RCR) in March 2011 and identified that the root cause evaluation did not address the issue of the difficulty of drawing a vacuum in the main condenser using the mechanical vacuum pump and three sets of air ejectors. Exelon generated IR 1193110 to document the inspectors' observation. During resident inspector follow-up of the issue, the inspectors identified that a similar event had taken place during the startup following the 1R21 outage in November 2006 and evaluated in an equipment apparent cause evaluation (EACE) documented in IR 556890. The inspectors identified that the source of the excess water found in the 48 inch hold up line was not identified in either the 2006 EACE or the 2010 RCR. Additionally, the inspectors questioned effectiveness of the corrective actions identified in the 2006 EACE due to the recurrence of the issue in 2010 which resulted in a reactor scram. The licensee documented the inspectors' concerns in IR 1227974, which is currently being evaluated. **(URI 05000219/2011003-02: Difficulty in drawing a main condenser vacuum during plant startup due to water in 48 inch holdup line)**

4OA3 Event Followup (71153) (1 sample)

The inspectors performed one event follow-up inspection activity. Documents reviewed for this inspection activity are listed in the Supplemental Information attached to this report.

.1 Trip of the 1A3 high pressure feedwater heater

a. Inspection Scope

On May 20, operations personnel in the control room responded to a trip of the 1A3 high pressure and the 1A2 intermediate pressure feedwater heaters.

The inspectors responded to the control room after hearing the site-wide announcement of the trip. The inspectors performed a walkdown of the control room and discussed the issue with Exelon personnel in order to understand the extent of the issues with the feedwater system. The inspectors verified that the operators implemented guidance contained in ABN-17, "Feedwater System Abnormal Conditions". The inspectors also reviewed operator logs, plant process computer (PPC) data, and system drawings to understand the plant's response. Exelon's troubleshooting identified a failed linkage on the 1A3 feedwater heater normal drain valve as the cause of the trip. The inspectors monitored the troubleshooting and repair efforts concerning the 1A3 feedwater heater normal drain valve and the subsequent return to full power.

b. Findings

No findings were identified.

4OA5 Other

.1 (Closed) NRC Temporary Instruction 2515/183, "Follow-up to the Fukushima Daiichi Nuclear Station Fuel Damage Event"

The inspectors assessed the activities and actions taken by the licensee to assess its readiness to respond to an event similar to the Fukushima Daiichi nuclear plant fuel damage event. This included (1) an assessment of the licensee's capability to mitigate

conditions that may result from beyond design basis events, with a particular emphasis on strategies related to the spent fuel pool, as required by NRC Security Order Section B.5.b issued February 25, 2002, as committed to in severe accident management guidelines, and as required by 10 CFR 50.54(hh); (2) an assessment of the licensee's capability to mitigate station blackout (SBO) conditions, as required by 10 CFR 50.63 and station design bases; (3) an assessment of the licensee's capability to mitigate internal and external flooding events, as required by station design bases; and (4) an assessment of the thoroughness of the walkdowns and inspections of important equipment needed to mitigate fire and flood events, which were performed by the licensee to identify any potential loss of function of this equipment during seismic events possible for the site.

Inspection Report 05000219/2011008 (ML111330025) documented detailed results of this inspection activity.

Following issuance of the report, the inspectors conducted detailed follow-up on selected issues.

.2 (Closed) NRC Temporary Instruction 2515/184, "Availability and Readiness Inspection of Severe Accident Management Guidelines (SAMGs)"

On May 19, the inspectors completed a review of the licensee's severe accident management guidelines (SAMGs), implemented as a voluntary industry initiative in the 1990's, to determine (1) whether the SAMGs were available and updated, (2) whether the licensee had procedures and processes in place to control and update its SAMGs, (3) the nature and extent of the licensee's training of personnel on the use of SAMGs, and (4) licensee personnel's familiarity with SAMG implementation.

The results of this review were provided to the NRC task force chartered by the Executive Director for Operations to conduct a near-term evaluation of the need for agency actions following the Fukushima Daiichi fuel damage event in Japan. Plant-specific results for Oyster Creek Generating Station were provided in an Attachment to a memorandum to the Chief, Reactor Inspection Branch, Division of Inspection and Regional Support, dated May 27, 2011 (ML111470361).

.3 (Closed) URI 05000219/2011008-01, Testing Documentation for Black Start Time Demonstration of SBO Alternate AC Source.

a. Inspection Scope

During the performance of the TI-183 inspection, the inspectors identified that Exelon could not locate a record of the completion of a test that demonstrated the amount of time required for startup and alignment of the alternate AC power source, which is a requirement of 10CFR50.63, loss of all alternating current power. The inspectors identified that the biannual station blackout start time test of the alternate AC source did not use the most conservative method of starting the alternate AC source and that there was very little margin between the demonstrated start time and the required starting time specified in Oyster Creek's station blackout coping analysis. The licensee entered this issue into the corrective action program as IR 1205775.

Exelon performed a test that demonstrated their ability to start the alternate AC source using the most conservative method of starting the source within the time requirements of the station blackout coping analysis. Exelon reviewed their alternate AC source starting procedures with Maxxim Power (owner of the alternate AC source) and identified several steps that could be done at the same time instead of being done sequentially. The review and optimization of the starting procedure has resulted in a shorter time to restore power to the plant following a station blackout. Exelon will update the biannual black start time test to reflect the optimized starting procedure. Exelon has documented their actions in IR 1205775.

The inspectors reviewed Exelon's actions to date including the completed corrective actions and did not identify any deficiencies. This closes URI 05000219/2011008-01.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

Resident Inspector Exit Meeting. On July 21, the inspectors presented their overall findings to members of Exelon's management led by Mr. M. Massaro, Site Vice President, and other members of his staff who acknowledged the findings. The inspectors confirmed that proprietary information reviewed during the inspection period was returned to Exelon.

EP Exit Meeting. On July 7, the inspectors discussed the inspection results by telephone with Mr. V. Cwietniewicz, Exelon Mid-Atlantic Corporate Emergency Preparedness Manager, and other members of the licensee staff. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

Annual Assessment Meeting. On May 26, a site visit was conducted by Mr. R. Bellamy, Branch Six Branch Chief for the NRC region 1 office. During Mr. Bellamy's visit, he met with Mr. M. Massaro, Site Vice President to discuss Oyster Creek's performance in 2010.

4OA7 Licensee-Identified Violations

None.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

**SUPPLEMENTAL INFORMATION****KEY POINTS OF CONTACT**Licensee Personnel

M. Massaro, Site Vice-President  
 R. Peak, Plant Manager  
 D. Dicello, Director, Work Management  
 M. McKenna, Director, Operations  
 G. Malone, Acting Director, Engineering  
 C. Symonds, Director, Training  
 J. Dostal, Director, Maintenance  
 J. Barstow, Manager, Regulatory Assurance  
 T. Keenan, Manager, Security  
 M. Ford, Manager, Environmental/Chemistry  
 A. Farenga, Manager, Radiological Protection  
 R. Skelsky, Senior Manager, Systems Engineering  
 H. Ray, Senior Manager, Design Engineering  
 G. Flesher, Shift Operations Superintendent  
 J. McDaniel, Manager, Nuclear Oversight  
 M. Seeloff, Manager, Corrective Action Program  
 J. Chrisley, Regulatory Assurance Specialist  
 J. Kerr, Regulatory Assurance Specialist  
 V. Cwietniewicz, Exelon Mid Atlantic Corporate Emergency Preparedness Manager  
 T. Dunn, Acting Operations Training Manager  
 M. Rossi, Program Lead, Training  
 R. Brown, Simulator Supervisor, Training  
 G. Young, Instructor, Training  
 J. Gessner, Exam Developer, Training  
 M. Mattis, Site Nurse

Others:

State of New Jersey, Bureau of Nuclear Engineering

**LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**Opened/Closed

05000219/2011003-01	NCV	Failure to perform acceptance inspection of contractor work results in damage to safety related instrument cable (Section 1R12)
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Opened

05000219/2011003-02	URI	Difficulty in drawing a main condenser vacuum during plant startup due to water in 48 inch holdup line (Section 4OA2)
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Closed

05000219/2011008-01	URI	Testing Documentation for Black Start Time Demonstration of SBO Alternate AC Source (Section 4OA5)
05000291/2515/183	TI	Follow-up to Fukushima Daiichi Nuclear Station Fuel Damage Event (Section 4OA5.1)
05000291/2515/184	TI	Availability of Readiness Inspection of Severe Accident Management Guidelines (Section 4OA5.2)



## LIST OF DOCUMENTS REVIEWED

In addition to the documents identified in the body of this report, the inspectors reviewed the following documents and records.

### **Section 1R01: Adverse Weather Protection**

#### Procedures

OP-OC-108-109-1001, "Preparation for Severe Weather T&RM for Oyster Creek"  
 OP-AA-108-111-1001, "Severe Weather and Natural Disaster Guidelines"  
 WC-AA-107, "Seasonal Readiness"  
 OP-OC-108-1001, "Preparation for Severe Weather T&RM for Oyster Creek"  
 OP-OC-108-109-1002, "Cold Weather Freeze Inspection"  
 OP-OC-108-109-1003, "Winter Readiness"  
 ABN-31, "High Winds"  
 ABN-32, "Abnormal Intake Level"

#### Drawings

19701, "Site plan – Topographic Survey Oyster Creek Nuclear Generating Station", Sheets 7, 8, 9 and 11"  
 06-121-203, "As-Built Survey Diesel Generator Building Security"  
 4020-1, "Emergency Diesel Generator Vault"

#### Condition Reports (IR)

1116152	1183456	1203582	1216545	1115321	1224385
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#### Work Orders (AR)

A2275942      A2261179

#### Other Documents

OC 09-00548-001, "Security Force on Force Changes for EDG Bldg Protection"  
 UFSAR 2.4.2, "Floods"

### **Section 1R04: Equipment Alignment**

#### Procedures

310, "Containment Spray System Operation"  
 309.2, "Reactor Building Closed Cooling Water System"  
 642.4.002, "Reactor Building Closed Cooling Water Valve Operability and In-Service Test"  
 322, "Service Water System"

#### Drawings

GE148F740, "Containment Spray System"  
 GE885D781, "Core Spray System"  
 BR 2006, "Flow Diagram Closed Cooling Water System"  
 BR 2005, "Reactor and Turbine Building Service Water System"

#### Condition Reports (IR)

871650	721574
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**Section 1R05: Fire Protection****Procedures**

ABN-29, "Plant Fires"

101.2, "Oyster Creek Site Fire Protection Program"

CC-AA-211, "Fire Protection Program"

333, "Plant Fire Protection System"

**Condition Reports (IR)**

1146158

**Other Documents**OB-FZ-6B, Oyster Creek Pre-Fire Plan Layout: "Reactor Building-480 Switchgear Room Floor  
El. 23'-6"

TB-FZ-11E, Oyster Creek Pre-Fire Plan Layout: "Turbine Building- Condenser Bay"

TB-FA-3A, Oyster Creek Pre-Fire Plan Layout: "4160 V Room"

TB-FA-3B, Oyster Creek Pre-Fire Plan Layout: "4160 V Room"

CW-FA-14, Oyster Creek Pre-Fire Plan: "Intake Structure"

**Section 1R06: Flood Protection Measures****Procedures**

EMG-3200.11, "Secondary Containment Control"

ER 616-041, "Local Control Panel ER 616-041 Torus Room Doors Indication and Alarm"

RAP-RB1C(1-7), "1-7 Sump Reactor Bldg Flr Drain Sump High Level"

**Drawings**

GU 3D-153-07-001, "General Arrangement Floor and Equipment Drains – Reactor Building"

GU 3E-153-02-001, "General Arrangement Reactor Building Plan Floor Elevation (-) 19'-6"

**Condition Reports (IR)**

0810465	1133347	1134943	1136370	1137368	1138066
1138809	1138971	1139611	1140289	1181834	1182660
1184050	1184058	1200090	1201122	1201543	1201634
1201643	1181875	1179636	1179669		

**Work Orders (AR)**

R2095953

**Other Documents**

White Paper No. 28063-005, "Design and Licensing Basis for Flooding at OCGS"

Internal Flood Evaluation Summary and Notebook – Oyster Creek Nuclear Generating Station

2009-04, Cable System Assessment Provided for OC Nuclear Generating System, 1/29/09

2009-09, Cable System Assessment Provided for OC Nuclear Generating System, 3/5/09

2010-74, Cable System Assessment Provided for OC Nuclear Generating System, 8/14/11

2010-122, Cable System Assessment Provided for OC Nuclear Generating System, 11/20/11

**Section 1R11: Licensed Operator Regualification Program****Procedures**

TQ-AA-150, Operator Training Programs

TQ-AA-201, Examination Security and Administration

OP-AA-105-102 NRC Active License Maintenance

Condition Reports

1221557      1220428

Job Performance Measures (JPMs)

279.06	201.01	261.03	200.14	345.06	308.03
229.01	223.05	264.08	200.05	345.01A	262.15
279.02	202.12	262.07	200.10	345.03	209.05
212.06	264.06	226.01			

Scenarios

2010-01	2010-08	2010-24	2010-21	2010-25	2010-10
2010-20	2010-15	2010-22	2010-04	2010-07	2010-13
2010-23.					

Written Examinations

11-4 "E" RO    11-4 "E" SRO    11-4 "A" RO    11-4 "A" SRO    11-4 "B" RO    11-4 "B" SRO.

Simulator Condition Reports

1191275      1204062      1204036

Transient Tests

TTS69, 14.8.1, Manual Reactor Trip:

Performed: 1/14/05, 2/3/06, 1/9/07, 6/30/08, 8/29/09, 10/3/10

TTS73, 14.8.5, Single Recirculation Pump Trip

Performed: 11/18/04, 10/10/05, 8/29/06, 7/31/07, 10/27/08, 11/1/09, 7/21/10

TTS70, Simultaneous Trip of All Feedwater Pumps

SWR 11756 and 11894 initiated for test discrepancies. 10/3/10

Annual/Normal Evolution Tests

SSP01, Steady State Test, 100%

SWR 12210 and MMI 7661 initiated for test discrepancies 12/5/10

Other Documents

EOP User's Guide (2000-BAS-3200.02)

**Section 1R12: Maintenance Effectiveness**Procedures

ER-AA-310, "Implementation of Maintenance Rule"

ER-AA-310-1005, "Maintenance Rule - Disposition Between (a)(1) and (a)(2)"

LS AA-125-1003, "Apparent Cause Evaluation Manual"

HU-AA-102, "Technical Human Performance Practices"

HU-AA-101, "Human Performance Tools and Verification Practices"

WC-AA-104, "Integrated Risk Management"

MA-AA-716-008, "Foreign Material Exclusion Program"

MA-AA-716-026, "Station Housekeeping/Material Condition Program"

624.4.001, "Main Steam Valve Position Indication and IST Test"  
 2400-SMM-3411.27, "Modified MSIV Overhaul"  
 2400-SME-3411.06, "MSIV Limit Switch Adjustment"  
 602.4.002, "MSIV Closure and IST Test"  
 ER-AA-321, "Administrative Requirements for Inservice Testing"  
 116, "Surveillance Testing Program"  
 LS-AA-120, "Issue Identification and Screening Process"  
 NO-AA-300-1001, "Nuclear Oversight Independent Inspection Plan"  
 NO-AA-300, "Inspection Planning and Execution of Quality Inspection Activities"  
 MA-AA-716-010, "Maintenance Planning"  
 MA-AA-1000, "Conduct of Maintenance Manual"  
 ES-029, "Piping and Equipment Insulation Design"  
 Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)"  
 SP-9000-41-005, "Installation Specification for Cables & Raceways at Oyster Creek Nuclear  
 Generating Station"  
 2400-GME-3780.52, "Installation, Testing and Termination of Wire and Cable"  
 330, "Standby Gas Treatment System"  
 651.4.003, "Standby Gas Treatment System 10-Hour Run- System 2"

#### Condition Reports (IR)

1210400	1210096	1163060	1163376	1225305	1210400
1209785	1227720	979382	1227663	1137580	556218

#### Work Orders (AR)

C2024970	C2025943	A2279541	A2051075	A2054075	A2054069
C2012793					

#### Drawings

GU 3E-611-17-011, "Electrical Elementary Diagram Control Panel 5F 6F Annunciator J 5-6F J"  
 GE 237E566, "Reactor Protection System Electrical Elementary Diagram"

#### Other Documents

NEI 93-01, "Industry Guideline for monitoring the Effectiveness of Maintenance at Nuclear  
 Power Plants"  
 1209785, "Equipment prompt investigation for receipt of a half scram on RPS System 2"

### **Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

#### Procedures

ER-AA-600-1042, "On-line Risk Management"  
 ER-AA-600-1021, "Risk Management Application Methodologies"  
 ER-AA-600-1014, "Risk Management Configuration Control"  
 ER-AA-600-1011, "Risk Management Program"  
 WC-OC-101-1001, "On-line Risk Management and Assessment"  
 ABN-31, "High Winds"

#### Condition Report (IR)

1232146	525922
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#### Other Documents

National Weather Service Tornado Warning, June 22, 2011  
 UFSAR 3.3, "Wind and Tornado Loadings"

**Section 1R15: Operability Evaluations****Procedures**

OP-AA-108-115, "Operability Determination"

ABN 36, "Loss of offsite Power"

RAP-T8e, "Tie Breaker ED Closed"

635.2.001, "4160 Switchgear Buses (A, B, C, D) and Circulating Water Pump Protective Relay Surveillance"

337, "4160 Volt Electrical System"

ER-AA-335-004, "Ultrasonic Measurement of Material Thickness and Interfering Conditions"

654.2.001, "Reactor Building Ventilation Supply Valve Position Indication Check"

620.4.004, "Source Range Monitor Test and Calibration"

**Drawings**

GU 3E-611-17-011, "Electrical Elementary Diagram Control Panel 5F 6F Annunciator J 5-6F J"

GE 237E566 Sh. 6, "Reactor Protection System Electrical Elementary Diagram Channel 2"

GE 237E566 Sh. 7, "Reactor Protection System Electrical Elementary Diagram Channel 2"

**Condition Reports (IR)**

1203285      1210400      1209785      1210096      1209774      1214035

1211929      1218720      1200968      1212499      1209980

**Work Orders (AR)**

C2024515      R2173236      C2025388      C2025389      A2275695      M2275695

**Other Documents**

NRC Inspection Manual - Part 9900 Technical Guidance, "Operability Determinations &amp; Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety"

FSAR Section 8.3.1.1.1, "Onsite Power Systems, 4.16kV Distribution System"

VM-OC-0013, "Namco Limit Switch and Connectors"

NDE Data Report 2011-002-015, "ESW Piping Under the Intake"

NDE Data Report 2011-002-016, "ESW Piping Under the Intake"

NDE Data Report 2011-002-017, "ESW Piping Under the Intake"

828.0.0016, "Nuclear Plant Operator Initial Course/Program, Electrical Distribution"

Technical Specifications 1.0-1, "Definitions"

Regulatory Guide 1.97, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants"

Technical Specifications 3.1.1, "Protective Instrumentation Requirements"

Operations Plant Manual Module 29B, "Source Range Monitor System"

**Section 1R18: Plant Modifications****Procedures**

OP-AA-108-111, "Adverse Condition Monitoring and Contingency Plan: TE-47 Step Change Resulted in rise in Indication Reactor Power"

2000-BAS-3200.-2, "EOP User's Guide"

680.4.009, "Remote Shutdown Panel Functional Test for Control Power Transfer"

680.4.006, "Remote Shutdown Panel Functional Test Train B"

202.1, "Power Operation"

Condition Report (IR)

1216739      1219447      1215193      1190467

Work Order (AR)

C2019658

Other

OC 10-00175-000, "ECR for Calculation on Combustion Turbine Tank Oil Level"

OC-2010-S-0048, 50.59 Review "Forked River Combustion Turbine Fuel Oil System Evaluation for SBO"

UFSAR 8.3.4, "Station Blackout"

C-1302-743-E310-006, "Forked River Fuel Oil Transfer System Performance Evaluation"

RG 1.155, "Station Blackout"

NUMARC 87-00, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors"

NRC Letter: "Safety Evaluation – Station Blackout Analysis Oyster Creek Nuclear Generating Station", dated 8/22/1991

10CFR50.63, "Loss of all Alternating Current Power"

Generic Letter 89-16, "Installation of a Hardened Wetwell Vent"

UFSAR 6.2.7, "Hardened Vent System"

GPU Nuclear letter, "Hardened Vent", dated 8/31/1990

C-1302-822-5360-036, "Isolation Valves Opening for 1% Decay Heat Venting"

MDD-OC-822A, "Modification Design Description for Oyster Creek Nuclear Generating Station Hardened Vent System"

C-1302-822-5320-037, "Hardened Vent Isolation Valves (V-23-13/16)"

VM-OC-2386, "Fisher Valves, Regulators & Valve Actuators Composite Manual"

GE Nuclear Energy Group letter OG-94-479-58, "Mark 1 Containment Hardened Vent", dated 6/23/1994

SE-402968-001, Technical Functions Safety Evaluation, "Hardened Vent Modification"

IR 1190467, "Event/Issues Report: TE-47 Final FW Temperature Element"

OC-11-00196-001, "ECR for TCCP to Use the Other TE-47 Element to Feed the PPC"

AD-AA-101-F-01, "Document Site Approval Form for TE-47 Modification during Power Operations (202.1)"

LS-AA-104-1001, "50.59 Review for TE-47 Modification"

LS-AA-104-1003, "50.59 Screening Form for TE-47 Modification"

AD-AA-101-F-10, "Temporary Procedure change-Site Approval Form-for TE-47"

UFSAR 7.2, "Reactor Trip System"

OP-AA-106-101-1006, "Issue resolution Documentation Form: TE-47 Step Change"

Technical Specifications 2.1, "Safety Limit- Fuel Cladding Integrity"

Technical Evaluation 1219447-02, "Hardened Vent System Valves Viton Liner Evaluation"

**Section 1R19: Post-Maintenance Testing**

Procedures

MA-AA-716-012, "Post Maintenance Testing"

OP-MA-109-101, "Clearance and Tagging"

654.4.003, "Control Room HVAC System Operability Test"

609.1.005, "Isolation Condenser Isolation Valve Inspection"

2400-SMM-3900.04, "System Pressure Test Procedure (ASME XI)"

2400-SMM-3411.04, "Removal/Installation of Reactor Safety Valves"

645.6.010, "Fire Suppression Deluge Valve Functional Test"

ER-AA-335-018, "Detailed, General, VT-1, VT-2, VT-1C, VT-3, and VT-3 Visual Examination of ASME Class MC and CC Containment Surfaces and Components"

ER-AA-330-001, "Section XI Pressure Testing"

2400-SMI-3623.1, "SRM/IRM Detector Insert & Retract Mechanism Maintenance"

Condition Report (IR)

1198623	1213232	1210068	1209933	1210003	1212922
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Drawing

GE148F262, "Emergency Condenser"

Work Order (AR)

R2175959	R2145671	R2136087	C2025410	C2025142	A2227478
C2024631					

Other

2011-002-020, "ASME IWE (Class MC) Containment Visual Examination NDE Report"

207223-PT-001, "Liquid Penetrant Inspection Report for Weld Joint Preparation on X-63 Penetration"

2011-002-013, "NDE Data Report for New Penetration ECR 10-00727"

207223-PT-002, "Liquid Penetrant Inspection Report for Weld Joint Preparation on X-63 Penetration"

207223-PT-003, "Liquid Penetrant Inspection Report for Final Weld on X-63 Penetration"

C2025142-19, "Radiographic report", dated 5/3/11

"Pneumatic pressure test report for Spare Drywell Penetration for ECR 10-00727," dated 5/3/11

**Section 1R20: Refueling and Outage Activities**

Procedures

201, "Plant Startup"

203, "Plant Shutdown"

305, "Shutdown Cooling System Operation"

OP-AA-108-108, "Unit Restart Review"

Condition Report (IR)

1211455	1209939	1209977	1209989	1210003	1210013
1210014	1210029	1210041	1210068	1210116	1210359
1209980					

**Section 1R22: Surveillance Testing**

Procedures

SA-AA-129, "Electrical Safety"

MA-AA-1000, "Conduct of Maintenance"

609.4.001, "Isolation Condenser Valve Operability and In Service Test"

678.4.005, "Station Blackout Functional Test"

676.3.002, "DWEDT Sump Flow Integrator-Channel Calibration"

676.3.003, "DW Sump Flow Integrator-Channel Calibration"

681.4.004, Technical Specification Log Sheet, performed 4/11/11

312.8, "Operation of the Containment Airborne Particulate and Gaseous Radiation Monitoring System"

312.9, "Primary Containment Control"

351.1, "The Chemical Waste/Floor Drain System Operating Procedure"

351.1 Attachment 351.1-11, "Testing 1-7 and 1-6 Sump Isolation Valves"  
 617.4.002, "CRD Exercise and Flow Test/IST Cooling Water Header Check Valve"  
 OP-AA-102-103, "Operator Work-Around Program"  
 RAP-C1f, "DW Press Hi-Hi RV 46 A/B"  
 RAP-C1g, "CAPGRMS Radiation High"  
 RAP-C3h, "DW Sump Hi Leak/Pwr Fail"  
 RAP-C4h, "DW Sump VLV Closed"  
 RAP-C8h, "DW Temp Hi"  
 RAP-RB1C(1-8), "1-8 Sump Drywell Floor Drain Sump High Level"  
 RAP-RB1C(2-7), "Reactor Drywell High Leak Rate"  
 RAP-RB1C(3-8), "641A/641B Drywell Flr Drain Sump Pumps Running"  
 RAP-RB1C(4-9), "DW Sump 1-8 WC-FY-103B/WC-FQ-103 Pwr Lost"  
 612.4.001, "Standby Liquid Control Pump and Valve Operability and In-Service Test"  
 304, "Standby Liquid Control System Operation"  
 619.3.017, "Reactor High Pressure Scram Test and Calibration"  
 604.3.001, "Reactor Building to Torus Power Vacuum Breaker Test"  
 116, "Surveillance Testing Program"  
 602.3.004, "Electromatic Relief Valve Pressure Sensor Test and Calibration"  
 330, "Standby Gas Treatment System"  
 651.4.002, "Standby Gas Treatment System 10-Hour Run System 1"

Condition Reports (IR)

1143867	1143791	1177273	1144454	1144457	1144458
1144459	1145963	1147123	1155658	1156390	1156010
1190343	1220188				

Work Orders (AR)

R2178435	A2272522	R2132087	A2265207	A2203405	R2178666
A2272820	R2165005	R2180656	R2086400	R2163538	

Other Documents

NRC Inspection Manual Part 9900 Technical Guidance, "Maintenance- Preconditioning of Structures, Systems, and Components Before Determining Operability"  
 OC-2011-S-0011, 50.59 Screening "351.1 The Chemical Waste/Floor Drain System Operating Procedure, Rev. 0"

**Section 40A1: Performance Indicator Verification**

Procedures

NEI 99-02, "Regulatory Assessment Performance Indicator Guideline"

Condition Reports (IR)

1064529	1161987	1155922	1053577
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Other Documents

Oyster Creek Performance Indicator Summary dated 4/19/2011

**Section 40A2: Identification and Resolution of Problems**

Procedures

325, Air Extraction and Off Gas System  
 201, Plant Startup



Drawings

BR 2008, "Air Extraction & Off-Gas System Flow Diagram"  
BR 2009, "H&V Main Stack Flow Diagram"

Condition Reports (IR)

556890	579204	1140316	985777	1062796	1197337
495114	1155520	1193110	1227974		

Work Orders (AR)

R2121215   R2182478   R2098257   R0800766

Other Documents

Component History Work Order Closure Remarks for V-7-29, dated 3/31/11  
Component History Work Order Closure Remarks for V-12-317, dated 3/31/11

**Section 4OA3: Event Followup**

Procedures

ABN-17, "Feedwater System Abnormal Conditions"

Drawings

BR 2003, "Condensate/Feed System Flow Diagram"  
BR 2007, "Heater Drain, Vent and Pressure Relief System Flow Diagram"

Condition Reports (IR)

1218368

Other Documents

NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73"

**Section 4OA5: Other**

Condition Reports (IR)

1205775